



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,992	03/30/2006	Akira Ishibashi	1033413-000008	1804
21839 7590 06/20/2011 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER DUONG, THO V	
			ART UNIT 3744	PAPER NUMBER
			NOTIFICATION DATE 06/20/2011	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com  
offserv@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,992	<b>Applicant(s)</b> ISHIBASHI ET AL.	
	<b>Examiner</b> THO V. DUONG	<b>Art Unit</b> 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-13 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 1,3,5-11 and 13 is/are rejected.
- 7) ☒ Claim(s) 4 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Applicant's amendment filed 9/16/10 is acknowledged. Claims 1,3-13 and 15 are pending.

#### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/16/10 has been entered.

#### ***Response to Arguments***

Applicant's arguments filed 9/16/10 have been fully considered but they are not persuasive. Applicant's argument that reference to Kushuara does not disclose that the remote heat exchanger does not have louvers and therefor pressure loss will be lower in comparison to the louvered upper heat exchanger, has been very carefully considered but is not found to be persuasive. In any passage arrangement, the louvers extend from the fin into the passages will clog or narrow the passages formed between two adjacent fins, which inherently increases the air flow resistance or pressure loss of the air flowing through the louvered the passage. One of the evidence to show that louvers on fins results in a pressure loss is A. Y. Gunter (US 3,438,433, column 1. lines 44-49). Furthermore, Kushuara explicitly discloses (see English abstract) that the remote or lower part heat exchanger (112) has less passage resistance than the upper heat exchanger, wherein the higher passage resistance leads to a higher pressure loss. Applicant's further argument that the element "103" is a rear guider and not a front panel, has been very

Art Unit: 3744

carefully considered but not found to be persuasive since "front" or "rear" is a relative term. A panel (103) can be considered to be a rear panel or a front panel with respect to different relative point. For example, with respect from the right most side wall of the indoor unit (shown in figure 11), the panel (103) can be considered as a front panel. Regarding claim 8, applicant's argument that reference to Futagami disclose that suction openings (4) formed in a front panel portion (3), which results in having air passing there through, has been very carefully considered but is not found to be persuasive. Applicant is reminded that the examiner must interpret the limitation as broadly as it reasonably allows. In this case, the "front panel" is considered to be element (3), which is the portion located bellow the inlet (4). Clearly, this front panel does not have "inlet (4)" formed therein since the panel (3) is the portion that is located bellow the inlet (4).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3,5,10,11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kusuhara Hisao (JP 1123179). Kusuhara Hisao discloses (figures 1,6,9 and 10-11) ) an indoor unit of an air conditioner comprising an upper air inlet (105); a plurality of fin tube type heat exchangers each having heat transfer tubes extending through stacked plate fins; a fan (101); an

Art Unit: 3744

air passage; and an air outlet (104); wherein the plurality of fin tube type heat exchangers include an adjacent heat exchanger disposed adjacent to the air inlet and a remote heat exchanger disposed farther from the upper air inlet than the adjacent heat exchanger, the adjacent and remote heat exchangers surround the fan; the adjacent heat exchanger consists of an upper front heat exchanger provided in an upper front area bellow the upper air inlet (105) and slightly tiled so as to make its upper portion backward and its lower portion positioned forward, and a rear heat exchanger provided in an upper area bellow the upper air inlet and slightly tilted so as to make its upper portion positioned forward and its lower portion backward, and the upper front and rear heat exchanger have substantially the same shape and are connected so that an end face of one of the upper front and rear heat exchangers is in face contact with a side face of the other heat exchanger near the upper inlet; the air pressure loss of an adjacent heat exchanger disposed adjacent the upper air inlet is larger than the air pressure loss of a remote heat exchanger (lower heat exchanger 112); the heat exchangers have louvers (109,110) and louvers (110) positioned on the most downstream side in a row direction are shaped like a parallelogram having opposite sides inclined downward at a predetermined angle to the row direction; and in the other embodiment, the lower heat exchanger (112) does not have louvers to lower pressure loss. Kusuhara discloses (figure 11) that a front panel (103) is formed in the indoor unit and air does not pass through the front panel.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3744

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futagami (JP 2002213764) in view of Itagaki (JP 10038302). Futagami discloses (figure 1) an indoor unit of an air conditioner comprising an upper air inlet (4); a plurality of fin tube type heat exchangers (8) each having heat transfer tubes extending through stacked plate fins; a fan (10); an air passage; and an air outlet (7); wherein the plurality of fin tube type heat exchangers include an adjacent heat exchanger (upper 8a and 8b) disposed adjacent to the air inlet and a remote heat exchanger (lower 8a) disposed farther from the upper air inlet than the adjacent heat exchanger, the adjacent and remote heat exchangers surround the fan, an auxiliary heat exchanger (12) is provided on an upstream side of the remote heat exchanger, a front panel (3) being formed in the indoor unit through which no air passes and a space (wherein 6 and 7 located) is provided bellow the front panel (3) opposite the auxiliary heat exchanger (12) to pass air there through; the front panel (3) extends to a distance between the air inlet (4) and the space bellow the panel; the adjacent heat exchanger includes of an upper front heat exchanger (upper 8a) provided in an upper front area bellow the upper air inlet and slightly tiled so as to make its upper portion backward and its lower portion positioned forward, and a rear heat exchanger ( 8b) provided in an upper area bellow the upper air inlet and slightly tilted so as to make its upper portion positioned forward and its lower portion backward, and the upper front and rear heat exchanger have the same shape. Futagami does not disclose that the fins have louvered portions and an end face of one of the front heat exchanger is in face contact with a side face of the other heat exchanger. Itagaki discloses (figures 1-2) an indoor air conditioner that has fins with louvers

Art Unit: 3744

portion for a purpose of improving the heat exchanger performance of the air conditioner and an end face of an upper heat exchanger (82,83) is in face contact with a side face of the other heat exchanger (82,83) of the heat exchanger adjacent the upper inlet of the air conditioner (figure 1) for a purpose of eliminating any intermediate joining portion between the two heat exchangers so a more compact air conditioner can be formed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Itagaki's teaching in Futagami's device for a purpose of improving the heat exchanger performance of the air conditioner and eliminating any intermediate joining portion between the two heat exchangers so a more compact air conditioner can be formed.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusahara Hisao in view of Futagami (JP 2002213764). Kusahara substantially discloses all of applicant's claimed invention as discussed above except for the limitation of an auxiliary heat exchanger provided on an air upstream side of the remote heat exchanger and a front panel with a space is provided bellow the front panel. Futagami discloses (figure 1) an indoor air heat exchanger that has an auxiliary heat exchanger (12) provided on an air upstream side of the remote heat exchanger for a purpose of enhancing the heat exchange performance for the air conditioner and a front panel (3) being formed in the indoor unit through which no air passes and a space is provided (6 and 7 located in) below the front panel (3) opposite the auxiliary heat exchanger; front panel (3) extends to a distance between the air inlet (4) and the space bellow the panel for a purpose of separating the upper inlet section and air outlet of the unit. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Futagami's teaching in Kusahara's device for a purpose of enhancing the heat exchange

Art Unit: 3744

performance of the air conditioner and separating the upper inlet section and air outlet section of the unit.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusahara in view of Kitazawa et al. (JP 2003028594A). Kusahara substantially disclose all of applicant's claimed invention as discussed above except for the limitation that the lower pressure can be resulted from a larger pitch. Kitazawa discloses (figure 1) a heat exchanger that has pitch of lower fins (2b) is larger than the pitch of upper fins (2a) for a purpose of lowering the pressure loss of the lower fin and delaying any icing accreting from the bottom fin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Kitazawa's teaching in Kusahara's device for a purpose of lowering the pressure loss of the lower fin and delaying any icing accreting from the bottom fin.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kusahara in view of Mukoda et al. (JP 411281280A). Kusahara substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the height of the louver of the remote heat exchanger is lower than the louver of the adjacent heat exchanger. The prior arts of Kusahara (figure 9) or Kitazawa (as rejected in claim 6) discloses to have a lower pressure loss in the remote heat exchanger than the adjacent heat exchanger achieved by having larger air flow passage ( higher fin pitch) or less flow obstacle in the flow path (flat fin in compare with louvered fin) in the remote heat exchanger than the adjacent heat exchanger. Mukoda et al discloses that the height of the louvers can also vary the pressure loss or flow resistance of the air flow. In the instant case, Mukoda teaches that one louver is shorter the other louvers for a purpose of lower the flow resistance or the pressure loss of the airflow while maintaining a high

Art Unit: 3744

heat transfer surface area of the fin due to the presence of the louvers on fins. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Mukoda's teaching of different louver height in Kusuhara's device for a purpose of lowering the pressure of loss or flow resistance of the remote heat exchanger while maintaining a high heat transfer surface area of the fin.

### ***Allowable Subject Matter***

Claims 4 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 15 is allowed.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Y. Gunter (US 3,438,433 )discloses louvered fin.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THO V. DUONG whose telephone number is (571)272-4793. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/THO V DUONG/  
Primary Examiner, Art Unit 3744